

WHAT IS CLAIMED IS:

[0069] 1. A light guide plate characterized in having a groove in a snaking pattern formed on a transparent plate having light-transmitting characteristics.

5 [0070] 2. A light guide plate claimed in claim 1 characterized in having said groove machined to have a V-shaped cross section by means of a cutting tool.

10 [0071] 3. A method of manufacturing a light guide plate characterized in forming a groove in a snaking pattern on a transparent plate having light-transmitting characteristics using a cutting tool.

[0072] 4. A method of manufacturing a light guide plate claimed in claim 3 characterized in having said groove machined to have a V-shaped cross section.

15 [0073] 5. A method of manufacturing a light guide plate claimed in either claim 3 or 4 characterized in finishing said V-shaped groove's side surfaces smooth and sharp using a V-shaped cutter as a cutting tool for said groove in order to be able to reflect light efficiently by said groove.

20 [0074] 6. A light source apparatus characterized in comprising: a light guide plate having a groove with a V-shaped cross section in a snaking pattern formed on a transparent plate having light-transmitting characteristics; and a light source disposed on said light guide plate's edge, 25 wherein

said groove with the V-shaped cross section reflects light emitted by said light source into said light guide plate's inside so that said light guide plate radiates the light outside.

30 [0075] 7. A light guide plate characterized in having a groove with a V-shape cross section in a snaking pattern on a transparent plate having light-transmitting

characteristics.

[0076] 8. A method of manufacturing a light guide plate characterized in forming a groove with a V-shaped cross section in a snaking pattern on a transparent plate having
5 light-transmitting characteristics using a cutting tool.

[0077] 9. A method of manufacturing a light guide plate claimed in either claim 8 characterized in finishing said V-shaped groove's side surfaces smooth and sharp using a V-shaped cutter as a cutting tool for said groove in order
10 to be able to reflect light efficiently by said groove.

[0078] 10. A light guide plate characterized in comprising: a transparent plate having light-transmitting characteristics;

a first snaking pattern of groove formed on said transparent
15 plate; and

a second pattern of groove that is formed to intersect or contact with said first pattern of groove on said surface;
wherein

the light that passes through said transparent plate is
20 reflected by said first pattern of groove and said second pattern of groove.

[0079] 11. A light guide plate claimed in claim 10 characterized in said second pattern of groove is formed in a snaking pattern.

25 [0080] 12. A light guide plate claimed in claim 10 characterized in said second pattern of groove is formed in a linear pattern.

[0081] 13. A light guide plate claimed in claim 11 characterized in that said first pattern of groove and said
30 second pattern of groove intersect or contact with each other as a result of having said first pattern of groove's and said second pattern of groove's translating directions are set

substantially parallel to each other and their snaking phases are set different from each other.

[0082] 14. A light guide plate claimed in claim 13 characterized in that the difference of the snaking phases 5 of said first pattern of groove and said second pattern of groove is set to approximately 180 degrees.

[0083] 15. A light guide plate claimed either one of claims 10 through 12 characterized in that said first pattern of groove's translating direction is set unparallel to said 10 second pattern of groove's translation direction so that said first and second patterns of grooves intersect or contact with each other.

[0084] 16. A light guide plate claimed in either one of claims 10 through 15 wherein a plurality of said first pattern 15 of grooves and a plurality of said second pattern of grooves are formed.

[0085] 17. A light guide plate claimed in either one of claims 10 through 16 characterized in having said first pattern of groove(s) snakes partly in a curvilinear form.

20 [0086] 18. A light guide plate claimed in either one of claims 10 through 16 characterized in having said first pattern of groove(s) snaking substantially in a sinusoidal form.

[0087] 19. A light guide plate claimed in either one of claims 10 through 16 characterized in having said first pattern 25 of groove(s) snaking in a form of straight line segments combined noncontiguously.

[0088] 20. A light guide plate claimed in either one of claims 10 through 16 characterized in having hexagonal areas surrounded by said first and second patterns of grooves that 30 are intersecting or contacting with each other.

[0089] 21. A light source apparatus characterized in comprising: a light guide plate claimed either one of claims

10 through 20; and

a light source disposed on said light guide plate's edge,
wherein

5 said groove with the V-shaped cross section reflects light
emitted by said light source into said light guide plate's
inside so that said light guide plate radiates the light
outside.

[0090] 22. A liquid crystal display device characterized
in comprising: a light source apparatus claimed in claim 21;
10 and

a liquid crystal panel disposed in parallel with said light
guide plate.

[0091] 23. An apparatus for manufacturing a guide plate
by forming a plurality of rows of grooves on a transparent
15 plate using a plurality of cutting tool bits affixed on a
blade, comprising:

a plurality of cutting tool bits affixed on a blade;
a rocking motion unit for moving said blade back and forth;
and a translating motion unit for moving said blade relative
20 to said transparent plate in the translation direction of
the grooves;

wherein

said blade is provided with

a first tool bit set consisting of a plurality of said cutting
25 tool bits for forming a first snaking pattern of grooves;
and a second tool bit set disposed a specified space apart
from said first tool bit set in said translation direction
of the grooves in order to form a second pattern of grooves
having a snaking phase difference relative to said first
30 pattern of grooves.